



February 1, 2012

Bruce H. Wolfe, Executive Officer
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Dear Mr. Wolfe:

Enclosed is the City of Richmond's Short-Term Trash Reduction Plan submitted in accordance with Provision C.10.a. in NPDES Permit No. CAS612008 issued by the San Francisco Bay Regional Water Quality Control Board, and/or NPDES Permit No. CA0083313 issued by the Central Valley Regional Water Quality Control Board.

I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,

Lynne Scarpa, Environmental Manager
City of Richmond

Baseline Trash Load and Short-Term Trash Load Reduction Plan

Template & Guidance

Submitted by:
City of Richmond
450 Civic Center Plaza
Richmond, California



In compliance with Provisions C.10.a(i) and C.10.a(ii) of Order R2-2009-0074

1/25/2012

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**CITY OF RICHMOND
SHORT-TERM TRASH LOAD REDUCTION PLAN**

CERTIFICATION STATEMENT

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature by Duly Authorized Representative:

A handwritten signature in black ink that reads "Lynne Scarpa". The signature is written in a cursive style and is positioned above a horizontal line.

**Lynne Scarpa
Environmental Manager**

1/25/2012

TABLE OF CONTENTS

LIST OF TABLES	5
LIST FIGURES	5
ABBREVIATIONS	VII
PREFACE	VII
1.0 INTRODUCTION	1
BASELINE TRASH GENERATION RATES PROJECT	1
TRASH LOAD REDUCTION TRACKING METHOD SUMMARY	2
SHORT-TERM TRASH LOAD REDUCTION PLAN	2
2.0 BASELINE TRASH LOADING ESTIMATE	4
DEFAULT TRASH GENERATION RATES (REGIONAL APPROACH)	4
PERMITTEE CHARACTERISTICS	5
<i>Land Use</i>	5
PERMITTEE-SPECIFIC BASELINE TRASH LOADING RATES	6
<i>Accounting for Baseline Street Sweeping</i>	6
<i>Accounting for Baseline Storm Drain Inlet Maintenance</i>	7
<i>Accounting for Baseline Pump Station Maintenance</i>	7
BASELINE TRASH LOADING ESTIMATES	7
3.0 LOAD REDUCTION CALCULATION PROCESS	11
STEP #1: TRASH GENERATION REDUCTION CONTROL MEASURES	11
STEP #2: ON-LAND INTERCEPTION CONTROL MEASURES	12
STEP #3: CONTROL MEASURES THAT INTERCEPT TRASH IN THE MS4	13
STEP #4: CONTROL MEASURES THAT INTERCEPT TRASH IN WATERWAYS	13
STEP #5: COMPARISON TO BASELINE TRASH LOAD	13
4.0 ENHANCED TRASH CONTROL MEASURES	14
CR-1: SINGLE-USE CARRYOUT PLASTIC BAG ORDINANCE	15
<i>Baseline Level of Implementation</i>	15
<i>Enhanced Level of Implementation</i>	15
<i>Reduction from Implementing Control Measure</i>	16
CR-2: POLYSTYRENE FOAM FOOD SERVICE WARE ORDINANCE	17
<i>Baseline Level of Implementation</i>	17
<i>Enhanced Level of Implementation</i>	17
<i>Percent Reduction from Enhancements</i>	17
CR-3: PUBLIC EDUCATION AND OUTREACH PROGRAMS	18
<i>Baseline Level of Implementation</i>	18
<i>Enhanced Level of Implementation</i>	18
<i>Percent Reduction from Enhancements</i>	19
CR-5: ANTI-LITTERING AND ILLEGAL DUMPING ENFORCEMENT ACTIVITIES	20
<i>Baseline Level of Implementation</i>	20
<i>Enhanced Level of Implementation</i>	20
<i>Percent Reduction from Enhancements</i>	20
QF-1: ON-LAND TRASH CLEANUPS (VOLUNTEERS AND/OR MUNICIPAL)	21
<i>Baseline Level of Implementation</i>	21
<i>Enhanced Level of Implementation</i>	21
<i>Percent Reduction from Enhancements</i>	23

QF-2: ENHANCED STREET SWEEPING	23
<i>Baseline Level of Implementation</i>	23
<i>Enhanced Level of Implementation</i>	23
<i>Percent Reduction from Enhancements</i>	23
QF-5: FULL-CAPTURE TREATMENT DEVICES	28
<i>Baseline Level of Implementation</i>	28
<i>Enhanced Level of Implementation</i>	28
<i>Percent Reduction from Enhancements</i>	28
QF-6: CREEK/CHANNEL/ShORELINE CLEANUPS	30
<i>Baseline Level of Implementation</i>	30
<i>Enhanced Level of Implementation</i>	30
<i>Percent Reduction from Enhancements</i>	30
5.0 SUMMARY OF TRASH CONTROL MEASURE ENHANCEMENTS	31
5.1 ANNUAL REPORTING AND PROGRESS TOWARDS TRASH LOAD REDUCTION GOAL(S)	33
5.2 CONSIDERATIONS OF UNCERTAINTIES	33
6.0 IMPLEMENTATION SCHEDULE	34
7.0 REFERENCES	36

LIST OF TABLES

Table 1.1. Trash control measures for which load reduction quantification credits or formulas were developed to track progress towards trash load reduction goals.

Table 2-1: Regional Default Annual Trash Generation Rates by Land Use Category.

Table 2-2: Jurisdictional areas and effective loading areas in the City of Richmond by land use classes identified by ABAG (2005).

Table 2-3: Preliminary annual trash baseline load for the City of Richmond.

Table 4.1. Trash control measures that will be implemented by City of Richmond to reach the 40% trash load reduction.

Table QF-3-1. Planned enhanced street sweeping program in the City of Richmond.

Table QF-6-1. Trash full-capture treatment devices within the jurisdictional boundaries of the City of Richmond that are planned for installation by July 1, 2014.

Table 5-1. Planned enhanced trash control measure implementation within the jurisdictional boundaries of the City of Richmond and associated trash loads reduced.

Table 6-1. Preliminary implementation schedule for enhanced trash control measures in the City of Richmond

LIST FIGURES

Figure 2-1: Estimated trash baseline loading rates for geographical areas in the City of Richmond

ABBREVIATIONS

BASMAA	Bay Area Stormwater Management Agencies Association
BID	Business Improvement District
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CASQA	California Stormwater Quality Association
CDS	Continuous Deflection Separator
CEQA	California Environmental Quality Act
CY	Cubic Yards
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
GIS	Geographic Information System
MRP	Municipal Regional Stormwater NPDES Permit
MS4	Municipal Separate Storm Sewer System
NGO	Non-Governmental Organization
NPDES	National Pollutant Discharge Elimination System
Q	Flow
SFRWQCB	San Francisco Regional Water Quality Control Board
SWRCB	State Water Resource Control Board
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
Water Board	San Francisco Regional Water Quality Control Board
WDR	Waste Discharge Requirements

PREFACE

This Baseline Trash Load and Short-Term Trash Load Reduction Plan (Plan) is submitted in compliance with provision C.10.a(i) and C.10.a(ii) of the Municipal Regional Stormwater NPDES Permit (MRP) for Phase I communities in the San Francisco Bay (Order R2-2009-0074). This Plan was developed using a regionally consistent format developed by the Bay Area Stormwater Management Agencies Association (BASMAA). Based on new information that becomes available during the implementation of this Short-Term Plan (e.g., revisions to baseline loading estimates or load reduction credits of quantification formulas), the City of Richmond may choose to amend or revise this Plan. If revisions or amendments are necessary, a revised Short-Term Plan will be submitted to the Water Board via the City of Richmond's annual reporting process.

1.0 INTRODUCTION

The Municipal Regional Stormwater NPDES Permit for Phase I communities in the San Francisco Bay (Order R2-2009-0074), also known as the Municipal Regional Permit (MRP), became effective on December 1, 2009. The MRP applies to 76 large, medium and small municipalities (cities, towns and counties) and flood control agencies in the San Francisco Bay Region, collectively referred to as Permittees. Provision C.10 of the MRP (Trash Load Reduction) requires Permittees to reduce trash from their Municipal Separate Storm Sewer Systems (MS4s) by 40 percent before July 1, 2014.

Required submittals to the San Francisco Bay Regional Water Quality Control Board (Water Board) by February 1, 2012 under MRP provision C.10.a (Short-Term Trash Loading Reduction Plan) include:

1. (a) Baseline trash load estimate, and (b) description of the methodology used to determine the load level.
2. A description of the Trash Load Reduction Tracking Method that will be used to account for trash load reduction actions and to demonstrate progress and attainment of trash load reduction levels.
3. A **Short-Term Trash Loading Reduction Plan** that describes control measures and best management practices that will be implemented to attain a 40 percent trash load reduction from its MS4 by July 1, 2014;

This Short-Term Trash Load Reduction Plan (Short-Term Plan) is submitted by the City of Richmond in compliance with the portions of MRP provision C.10.a.i listed as 1a and 3 above. In compliance with 1b, BASMAA submitted a progress report on behalf of Permittees that briefly describes the methodologies used to develop trash baseline loads (BASMAA 2011a). These methods are more fully described in BASMAA (2011b, 2011c). Lastly, the *Trash Load Reduction Tracking Method Technical Report* (BASMAA 2011d) was submitted by BASMAA on behalf of Permittees in compliance with submittal 2 described above. The Baseline Loading Rates and Tracking Method projects are briefly described below.

Baseline Trash Generation Rates Project

Through approval of a BASMAA regional project, Permittees agreed to work collaboratively to develop a regionally consistent method to establish baseline trash loads from their MS4s. The project, also known as the *BASMAA Baseline Trash Generation Rates Project* assists Permittees in establishing a baseline to demonstrate progress towards MRP trash load reduction goals (i.e., 40 percent). The intent of the project was to provide a scientifically-sound method for developing (default) baseline trash generation rates that can be adjusted, based on Permittee/site specific conditions; and used to develop baseline loading rates and loads. Baseline loads form the reference point for comparing trash load reductions achieved through control measure implementation.

Baseline trash loading rates are quantified on a volume per unit area basis and based on factors that significantly affect trash generation (e.g., land use, population density, and economic profile). The method used to establish baseline trash loads for each Permittee builds off “lessons learned” from previous trash loading studies conducted in urban areas (Allison and Chiew 1995; Allison et al. 1998; Armitage et al. 1998; Armitage and Rooseboom 2000; Lippner et al. 2001; Armitage 2003; Kim et al. 2004; County of Los Angeles 2002, 2004a, 2004b; Armitage 2007). The method is based off a conceptual model developed as an outgrowth of these studies (BASMAA 2011b). Baseline trash loading rates were developed through the quantification and characterization of trash captured in Water Board recognized

full-capture treatment devices installed in the San Francisco Bay area. Methods used to develop trash baseline loading rates are more fully described in BASMAA (2011b, 2011c, and 2012).

Trash Load Reduction Tracking Method Summary

The trash load reduction tracking method, described in the *Trash Load Reduction Tracking Method Technical Report*, assists Permittees in demonstrating progress towards reaching trash load reduction goals defined in the MRP (e.g., 40 percent). The tracking method is based on information gained through an extensive literature review and Permittee experiences in implementing stormwater control measures in the San Francisco Bay Area. The literature review was conducted to evaluate quantification methods used by other agencies to assess control measure effectiveness or progress towards quantitative goals. Results are documented in the *Trash Load Reduction Tracking Method: Technical Memorandum # 1 – Literature Review* (BASMAA 2011d).

Methods attributable to specific trash control measures fall into two categories: 1) trash load reduction quantification formulas; and 2) load reduction credits (BASMAA 2011e). Quantification formulas were developed for those trash control measures that were deemed feasible and practical to quantify load reductions at this time. Load reduction credits were developed for all other control measures included in the methodology development. Both categories of methods assume that as new or enhanced trash control measures are implemented by Permittees, a commensurate trash load reduction will occur. Progress towards load reduction goals will be demonstrated through comparisons to established trash baseline load estimates developed through the BASMAA *Baseline Generation Rates Project*.

Short-Term Trash Load Reduction Plan

The purpose of this Short-Term Plan is to describe the current level of implementation of control measures and best management practices, and identify the type and extent to which new or enhanced control measures and best management practices will be implemented to attain a 40 percent trash load reduction from their MS4 by July 1, 2014. The Short-Term Plan was developed using a template created by BASMAA through a regional project. New and enhanced trash control measures (i.e., Best Management Practices) that Permittees may implement to demonstrate trash load reduction goals are included in Table 1.1. This list was developed collaboratively through the BASMAA Trash Committee, which included participation from Permittee, stormwater program, Water Board and non-governmental organization (NGO) staff. The list of control measures is based on: 1) the potential for Permittees to implement; 2) the availability of information required to populate formulas and develop credits; and 3) the expected benefit of implementation. Load reductions associated with each control measure are demonstrated either through a quantification formula (QF) or credits (CR) described in the *Trash Load Reduction Tracking Method Technical Report* (BASMAA 2011e).

In efforts to reduce trash discharged from MS4s, Permittees may choose to implement control measures that are not included in Table 1.1 or described more fully in BASMAA (2011e). If a Permittee chooses to do so, methods specific to calculating trash load reductions for that control measure would need to be developed. Additionally, at that point, consideration should be given to updating this Short-Term Plan.

Additionally, based on new information that becomes available during the implementation of this Short-Term Plan (e.g., revisions to baseline loading estimates or load reduction credits of quantification formulas), the City of Richmond may amend or revise this Plan. If revisions or amendments are

necessary, a revised Short-Term Plan will be submitted to the Water Board via the City of Richmond's annual reporting process.

Table 1.1. Trash control measures for which load reduction quantification credits or formulas were developed to track progress towards trash load reduction goals.

Load Reduction Credits
Single-use Carryout Plastic Bag Ordinances
Polystyrene Foam Food Service Ware Ordinances
Public Education and Outreach Programs
Activities to Reduce Trash from Uncovered Loads
Anti-Littering and Illegal Dumping Enforcement Activities
Improved Trash Bin/Container Management Activities
Single-Use Food and Beverage Ware Ordinances
Quantification Formulas
On-land Trash Pickup (Volunteer and/or Municipal)
Enhanced Street Sweeping
Partial-Capture Treatment Devices
Enhanced Storm Drain Inlet Maintenance
Full-Capture Treatment Devices
Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal)

This Short-Term Plan is organized into the following sections:

- Introduction;
- Trash Baseline Load Estimate;
- Load Reduction Calculation Process
- Planned Implementation of New or Enhanced Control Measures;
- Implementation Schedule; and
- References

2.0 BASELINE TRASH LOADING ESTIMATE

Note: *Tables and information presented in this section are subject to change based on the results of a third monitoring event of the BASMAA Baseline Trash Loading Rates Project. Therefore, this section of the Short-Term Plan may be updated with revised trash generation rates, baseline loading rates, and baseline loads.*

This section provides the estimated annual trash baseline load from the City of Richmond's Municipal Separate Storm Sewer System (MS4). In compliance with Provision C.10.a.ii of the MRP, the City of Richmond worked collaboratively with other MRP Permittees through BASMAA to develop data and the process necessary to establish baseline trash loading estimate from our MS4. The collaborative project was managed through the BASMAA Trash Committee and included a series of steps described in BASMAA (2012) and listed below. The approach was intended to be cost-effective and consistent, but still provide an adequate level of confidence in trash loads from MS4s, while acknowledging that uncertainty in trash loads still exists. The approach entailed the following steps:

1. Conduct literature review;
2. Develop conceptual model;
3. Develop and implement sampling and analysis plan;
4. Test conceptual model;
5. Develop and apply default trash **generation rates** to Permittee effective loading areas;
6. Adjust default trash generation rates based on baseline levels of control measure implementation by the Permittee to develop trash **baseline loading rates**; and,
7. Calculate Permittee-specific annual trash **baseline load**.

Through the collaborative BASMAA project, default baseline trash generation rates (volume per area) were developed for a finite set of categories, based on factors that significantly affect trash loads (e.g., land use). These trash generation rates were then applied to effective loading areas in applicable jurisdictional areas within the City of Richmond. Trash generation rates were then adjusted based on baseline street sweeping, storm drain inlet maintenance, and stormwater pump station maintenance conducted in each applicable area. The sum of the trash loads (i.e., rate multiplied by area) from each effective loading area represents the City of Richmond's baseline trash load from its MS4. A full description of the methods by which trash baseline loads were developed is included in BASMAA (2012a) and is summarized below.

PERMITTEE CHARACTERISTICS

Incorporated in 1905, the City of Richmond covers 20,350 acres in Contra Costa County, and has a jurisdictional area of 10,612 acres. According to the 2010 Census, it has a population of 103,701, with a population density of 3,449.8 people per square mile, and average household size of 2.83. Of the 103,701 who call the City of Richmond home, 24.9% are under the age of 18, 10.0% are between 18 and 24, 29.7% are between 25 and 44, 25.2% are between 45 and 65, and 10.2% are 65 or older.

Top employers in the City of Richmond include West Contra Costa Unified School District, Chevron, City of Richmond, Kaiser Permanente, and Sun Power. The City is also home to four major shopping areas -

Hilltop Mall, the 23rd Street business district, the Richmond Shopping Center and the Macdonald 80 Shopping Center. The median household income was \$44,210 in 2000¹.

DEFAULT TRASH GENERATION RATES (REGIONAL APPROACH)

A set of default trash generation rates was developed via the BASMAA regional collaborative project (BASMAA 2012a). Default generation rates were developed based on a comparison between trash characterization monitoring results, land uses, economic profiles, and other factors that were believed to possibly affect trash generation. Three trash characterization monitoring events were scheduled via the *Trash Loading Rates Project*. Due to the compliance timeline in the MRP, only two of three trash characterization monitoring events were used to develop trash generation rates described in BASMAA (2012a) and presented in this section. Following the completion of the third characterization event (Winter 2011/12), this section of the Short-Term Plan may be updated to reflect the most up-to-date trash generation and loading rates available. Trash generation rates based on the results of two of the three characterization events are shown in Table 2-1 for each trash loading category.

Table 2-1: Regional Default Annual Trash Generation Rates by Land Use Category.

Land Use Category	Generation Rates (Gallons/Acre)
Retail and Wholesale	29.99
High Density Residential	17.04
K-12 Schools	13.14
Commercial and Services/ Heavy, Light and Other Industrial	7.08
Urban Parks	2.14
Low Density Residential	1.25
Rural Residential	0.17

JURISDICTIONAL AND EFFECTIVE LOADING AREAS

Default trash baseline generation rates presented in Table 2-1 were applied to effective loading areas with **jurisdictional areas** within the City of Richmond. The City of Richmond's jurisdictional areas includes all urban land areas within the City of Richmond boundaries that are subject to the requirements in the MRP. Land use areas identified by a combination of the ABAG 2005 land use dataset and Permittee knowledge that were not included within the City's jurisdictional areas include:

- Federal and State of California Facilities and Roads (e.g., Interstates, State Highways, Military Bases, Prisons);
- Roads Owned and Maintained by Contra Costa County;

¹ From the 2000 Census. The median household income for the City of Richmond from the 2010 Census is not currently available.

- Colleges and Universities (Private or Public);
- Non-urban Land Uses (e.g., agriculture, forest, rangeland, open space, wetlands, water);
- Communication or Power Facilities (e.g., PG & E Substations);
- Water and Wastewater Treatment Facilities; and
- Other Transportation Facilities (e.g., airports, railroads, and maritime shipping ports).

Once the City of Richmond's jurisdictional area was delineated, an effective trash loading area was developed by creating a 200-foot buffer around all streets within the City's jurisdictional area. The purpose of the effective loading area is to eliminate land areas not directly contributing trash to the City's MS4 (e.g., large backyards and rooftops). Both the jurisdictional and the effective loading areas for the City of Richmond are presented in Table 2-2.

Table 2-2: Jurisdictional areas and effective loading areas in the City of Richmond by land use classes identified by ABAG (2005).

Land Use Category	Jurisdictional Area (Acres)	Effective Loading Area (Acres)	% of Effective Loading Area
High Density Residential	3,033	2,819	41
Low Density Residential	1,859	1,664	24
Rural Residential	51	22	0
Commercial and Services/ Heavy, Light and Other Industrial	4,361	1,602	23
Retail and Wholesale	509	369	5
K-12 Schools	231	139	2
Urban Parks	569	300	4
TOTAL	10,612	6,915	100%

PERMITTEE-SPECIFIC BASELINE TRASH LOADING RATES

Regional default trash generation rates developed through the BASMAA regional collaborative project were applied to effective loading areas within the City of Richmond based on identified land uses. These generation rates were then adjusted based on the calculated effectiveness of baseline street sweeping, storm drain inlet maintenance and pump station maintenance implemented by the City. These adjustments were conducted in GIS due to the site specificity of baseline generation rates and baseline control measure implementation. The following sections describe the baseline level of implementation for these three control measures. A summary of trash baseline generation and loading rates for the City of Richmond are provided in Table 2-3 and areas associated with these rates are illustrated in Figure 2-1.

Baseline Street Sweeping

A "baseline" street sweeping program is defined as the sweeping frequency and parking enforcement implemented by the City of Richmond prior to effective date of the MRP. Baseline street sweeping differs from "enhanced" street sweeping, which includes increased parking enforcement and/or sweeping conducted at a frequency greater than baseline ceiling (i.e., once per week for retail land uses and twice per month for all other land uses). The baseline ceiling was created to not penalize implementers of enhanced street sweeping programs prior to the effective date of the MRP. For those Permittees that sweep less frequent than the baseline ceiling, their current sweeping frequency serves as their baseline.

The City of Richmond's baseline street sweeping program includes sweeping most streets in residential areas once per month, most streets in the retail areas once per week, and sweeping most arterial roads twice per month. The City's current street sweeping program is the same as the baseline except that arterial roads are swept once per week.

Parking enforcement signs for street sweeping are on most streets within the city. There is no additional parking enforcement equivalent. The estimated trash load reduced via baseline street sweeping is presented in Table 2-3.

Baseline Storm Drain Inlet Maintenance

Within the City, storm drain inlets were cleaned at a baseline level of one time per year prior to the effective date of the MRP. Based on this baseline frequency and the effectiveness rating developed in BASMAA (2012b), the baseline storm drain maintenance program in the City of Richmond has an annual effectiveness rating of 5%. The estimated trash load reduced via baseline storm drain inlet maintenance is presented in Table 2-3.

Baseline Stormwater Pump Station Maintenance

The City of Richmond owns and maintains seven stormwater pump stations. Of these stations, none have trash racks that capture trash and allow for removal during maintenance.

BASELINE TRASH LOADING ESTIMATE

The estimated baseline trash load from the City of Richmond was calculated as the sum of the loads from the City's effective loading area, adjusted for baseline implementation of street sweeping, storm drain inlet maintenance, and pump station maintenance. The preliminary annual trash baseline load for the City of Richmond is presented in Table 2-3. Preliminary baseline trash loading rates are presented in Figure 2-1 to provide a geographical illustration of areas with estimated low, moderate, high and very high trash loading rates.

Table 2-3: Preliminary annual trash baseline load for the City of Richmond.

Category	Annual Load (gallons)
Preliminary Generation Trash Load	75,002
Load Removed via Baseline Street Sweeping	32,266
Load Removed via Baseline Storm Drain Inlet Maintenance	2,137
Load Removed via Baseline Stormwater Pump Station Maintenance	87 ²
Preliminary Trash Baseline Load	40,512

² Load removed from pump station trash rack maintenance by Contra Costa County

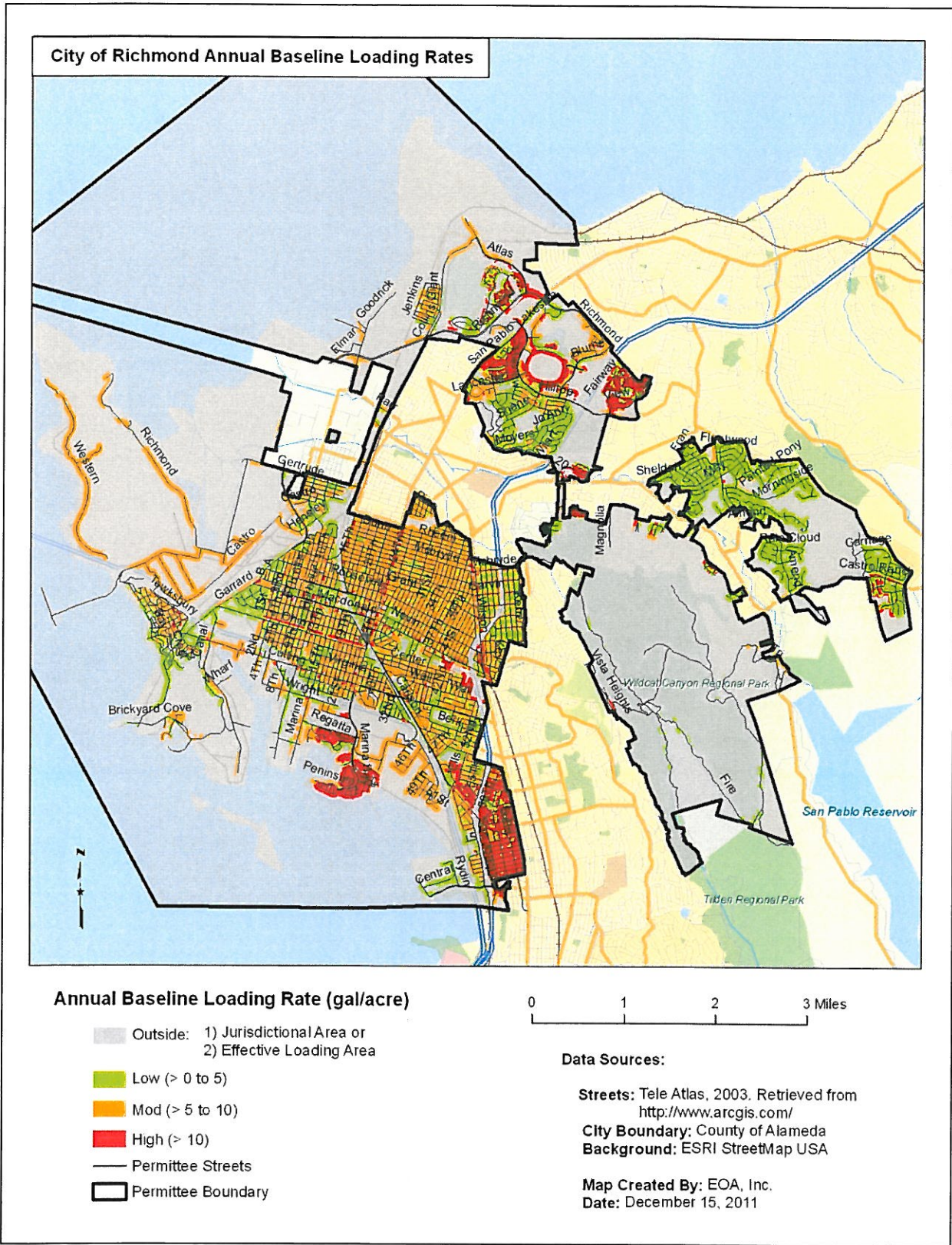


Figure 2-1: Estimated trash baseline loading rates for geographical areas in the City of Richmond

3.0 LOAD REDUCTION CALCULATION PROCESS

Using the guiding principles and assumptions described BASMAA (2011e), a stepwise process for calculating trash load reductions was developed collaboratively through BASMAA. This process is fully described in Trash Load Reduction Tracking Method Technical Report (BASMAA 2011e) and is briefly summarized in this section. The process takes into at what point in the trash generation and transport process a trash control measure: 1) prevents trash generation, 2) intercepts trash in the environment prior to reaching a water body, or 3) removes trash that has reached a water body. In doing so, it avoids double-counting of trash load reductions associated with specific control measures.

To demonstrate trash load reductions, baseline trash loading rates will be adjusted using the following process:

- Step #1:** Existing Enhanced Street Sweeping
- Step#2:** Trash Generation Reduction
- Step #3:** On-land Interception
- Step #4:** Trash Interception in the Stormwater Conveyance System
- Step #5:** Trash Interception in Waterways
- Step #6:** Comparison to Baseline Trash Load

Reductions calculated in Steps 2 and 5 are assumed to be implemented at a constant rate on an “area-wide” basis. For example, if a new region-wide public education strategy is implemented within the San Francisco Bay area, all Permittees can apply load reduction credits associated with this control measure. In contrast, Steps 1, 3 and 4 are “area-specific” reductions that only apply to specific areas within a Permittee’s jurisdiction. Area-specific control measures include full-capture treatment devices and enhanced street sweeping. Area-specific reductions may require the use of a Geographic Information System (GIS) to calculate.

Reductions are generally applied in the sequence as presented in Figure 2-1 and described below, although some reductions may be applied “in-parallel” and calculated during the same sub-step in the process.

Step #1: Existing Enhanced Street Sweeping

Trash load reductions due to existing enhanced street sweeping implemented prior to the effective date of the MRP and conducted at levels above baseline levels are not incorporated into each Permittee’s trash baseline load. Therefore, load reductions associated with existing enhanced are accounted for first in the trash load reduction calculation process. Existing enhanced street sweeping includes street sweeping conducted at a frequency greater than **1x/week** for streets within retail land use areas or greater than **2x/month** for streets in all other land use areas. The result of adjustments made to trash baseline loads due to the implementation of existing enhanced street sweeping is a set of **current baseline loading rates** and a **current baseline load**.

Step #2: Trash Generation Reduction Control Measures

Trash generation reduction control measures prevent or greatly reduce the likelihood of trash from being deposited onto the urban landscape. They include the following area-wide control measures:

- CR-1: Single-Use Carryout Plastic Bag Ordinances
- CR-2: Polystyrene Foam Food Service Ware Ordinances
- CR-3: Public Education and Outreach Programs
- CR-4: Reduction of Trash from Uncovered Loads
- CR-5: Anti-Littering and Illegal Dumping Enforcement
- CR-6: Improved Trash Bin/Container Management
- CR-7: Single-Use Food and Beverage Ware Ordinances

Load reductions associated with trash generation reduction control measures are applied on an area-wide basis.³ Therefore, reductions in current baseline loading rates are adjusted uniformly based on the implementation of the control measure and the associated credit claimed.

Baseline loading rate adjustments for all generation reduction controls measures implemented may be applied in-parallel, but should be applied prior to calculating on-land interception measures discussed in Step #3. The result of adjustments to trash baseline loading rates due to the implementation of these enhanced control measures will be a set of **street loading rates**. The **street load** is the volume of trash estimated to enter the environment and available for transport to the MS4 if not intercepted via on-land control measures described in Step #2.

Step #3: On-land Interception Control Measures

Once trash enters the environment, it may be intercepted and removed through the following control measures prior to reaching the stormwater conveyance system:

- QF-1: On-land Trash Cleanups (Volunteer and/or Municipal) (Area-wide)
- QF-2: Enhanced Street Sweeping (Area-specific)

Since on-land trash cleanups can affect the amount of trash available to street sweepers, load reductions associated with their implementation will be quantified first, followed by street sweeping enhancements. On-land trash cleanups will be applied as an area-wide reduction and all effective loading rates will be adjusted equally. Enhanced street sweeping, however, is an area-specific control measure and only those effective loading rates associated with areas receiving enhancements will be adjusted. Due to the spatial nature of enhanced street sweeping, GIS may be needed to conduct this step.

The result of adjustments to effective loading rates due to the implementation of these enhanced control measures will be a set of **conveyance system loading rates**. The **conveyance load** is the volume of trash estimated to enter the stormwater conveyance system (e.g., storm drains).

³ The only exception to this statement are load reductions associated with the establishment of Business Improvement Districts (BIDs) or equivalent, which are specific to geographic areas and considered "area-specific".

Step #4: Control Measures that Intercept Trash in the MS4

Control measures that intercept trash in the stormwater conveyance system are area-specific. Therefore, they only apply to land areas and associated trash loads reduced. Conveyance system loading rates developed as a result of Step #3 should be adjusted in-parallel for the following control measures:

- QF-3a: Partial-capture Treatment Device: Curb Inlet Screens (Area-specific)
- QF-3b: Partial-capture Treatment Device: Stormwater Pump Station Trash Racks Enhancements (Area-specific)
- QF-4: Enhanced Storm Drain Inlet Maintenance (Area-specific)
- QF-5: Full-Capture Treatment Devices (Area-specific)

Load reductions for these control measures are calculated in-parallel because they are applied to independent geographical areas. Reductions from all control measures described in this step are area-specific and may require the use of GIS to calculate a set of **waterway loading rates**. Once waterway loading rates have been determined, a **waterway load** will be developed and used as a starting point for calculating load reductions associated with trash interception in waterways discussed in Step #5.

Step #5: Control Measures that Intercept Trash in Waterways

The load of trash that passes through the stormwater conveyance system without being intercepted may still be removed through interception in waterways. There are two control measures associated with interception in waterways:

- QF-3c: Partial-capture Treatment Device: Litter Booms/Curtains (Area-wide)
- QF-7: Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) (Area-wide)

As these control measures are implemented, load reduction estimates can be calculated in-parallel for these two measures.

Step #6: Comparison to Baseline Trash Load

Applying the four steps described in the processes above will provide an estimated trash load (volume) remaining after trash control measures are implemented. As depicted in the following equation, the relative percent difference between the baseline load and the load remaining after control measures are implemented is the percent reduction that will be used to assess progress towards MRP trash load reduction goals.

$$\frac{\text{Baseline Load} - \text{Remaining Load}}{\text{Baseline Load}} = \% \text{ Reduction}$$

4.0 ENHANCED TRASH CONTROL MEASURES

This section describes the new or enhanced trash control measures planned for implementation by the City of Richmond. The enhanced control measures described are designed to reach a 40% reduction by July 1, 2014. New and enhanced control measures that will be implemented by City of Richmond include those listed in Table 4.1.

Table 4.1. Trash control measures that will be implemented by City of Richmond to reach the 40% trash load reduction.

Control Measure
Single-use Carryout Plastic Bag Ordinances
Polystyrene Foam Food Service Ware Ordinances
Public Education and Outreach Programs
Anti-Littering and Illegal Dumping Enforcement Activities
On-land Trash Pickup (Volunteer and/or Municipal)
Enhanced Street Sweeping
Full-Capture Treatment Devices
Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal)

CR-1: Single-use Carryout Plastic Bag Policy

Single-use plastic carryout bags have been found to contribute substantially to the litter stream and to have adverse effects on marine wildlife (United Nations 2009, CIWMB 2007, County of Los Angeles 2007). The prevalence of litter from plastic bags in the urban environment also compromises the efficiency of systems designed to channel storm water runoff. Furthermore, plastic bag litter leads to increased clean-up costs for the Permittees and other public agencies.

Based on recent experiences of municipalities throughout the State, the process Permittees must go through to enact a single-use carryout plastic bag policy/ordinance is difficult due to intense scrutiny and opposition from not only public interest groups and lobbyists, but also merchants and community members. In most cases, most opposition groups are pressing for the development of Environmental Impact Reports (EIRs) in accordance with the California Environmental Quality Act (CEQA).

Baseline Level of Implementation

Prior to adoption of the MRP, Permittees within the Bay area have enacted policies or ordinances on Single-use Carryout Plastic Bags. To avoid penalizing these early implementers, an applicable control measure implemented by a Permittee prior to the effective date of the MRP will be credited equally to a control measure implemented after the effective date. Therefore, the baseline level of implementation is not applicable for this control measure.

Enhanced Level of Implementation

The City of Richmond is committed to pursuing a plastic bag ban and is currently working with other Cities in west Contra Costa county to enact a plastic bag ban. The City of Richmond plans to adopt an ordinance prohibiting the distribution of single-use carryout plastic bags. The ordinance will ban the use of single-use carryout plastic bags from all retail establishments except non-profit reuse organization such as the Salvation Army and restaurants. The ordinance will impose a five cent charge on paper bags. The West Contra Costa Integrated Waste Management Authority (Authority) has hired a consultant to prepare the CEQA documents on behalf of all West County jurisdictions. The City of Richmond Council approved the joint collaboration. The City of Richmond will work with the Authority and the member agencies to educate the public prior to the ordinance adoption. The ordinance is scheduled to be implemented on July 1, 2013. The total percent trash reduced from MS4s as a result of implementing a single-use carryout plastic bag ordinance will be reported in the Annual Report submitted each September to the Water Board.

Reduction from Implementing Control Measure

The City of Richmond will receive a 12 percent reduction credit for implementing specific enhanced control measures described in Enhanced Level of Implementation section above. The 12 percent reduction credit will be applied to the City of Richmond's baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2011e). A summary of all load reductions anticipated through the implementation of this plan are included in Section 4.0.

CR-2: Polystyrene Foam Food Service Ware Policy

Polystyrene foam is used as food ware in the food service industry. According to the USEPA, floatable debris in waterways, such as products made of polystyrene, is persistent in the environment and has physical properties that can have serious impacts on human health, wildlife, the aquatic environment and the economy (USEPA 2002). Due to its properties, polystyrene foam used as food ware is typically not recycled. Since 1990, over 100 government agencies within the United States, including over twenty within the Bay area have enacted full or partial bans on polystyrene foam food service ware.

Baseline Level of Implementation

Prior to adoption of the MRP, over twenty agencies within the Bay area enacted full or partial bans on polystyrene foam food service ware. To avoid penalizing these early implementers, an applicable control measure implemented by a Permittee prior to the effective date of the MRP will be credited equally to a control measure implemented after the effective date. Therefore, the baseline level of implementation is not applicable for this control measure.

Enhanced Level of Implementation

City of Richmond adopted an ordinance banning polystyrene foam food service ware at the point-of-sale. The foodware ordinance prohibits the distribution of polystyrene foam single-use food and beverage ware at all food service vendors. The ordinance became effective in August 2010. The percent trash reduction from MS4s as a result of implementing a polystyrene foam food service ware ordinance will be reported in the Annual Report submitted each September.

Percent Reduction from Enhancements

The City of Richmond will receive an 8 percent reduction credit for implementing specific enhanced control measures described in *Enhanced Level of Implementation* section above. The 8 percent reduction credit will be applied to the City of Richmond's baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2011e). A summary of all load reductions anticipated through the implementation of this plan are included in Section 4.0.

CR-3: Public Education and Outreach Programs

Permittees in the San Francisco Bay Area have implemented public education and outreach programs to inform residents about stormwater issues relating to pollutants of concern, watershed awareness and pollution prevention. Public education and outreach efforts include developing and distributing brochures and other print media; posting messages on websites and social networking media (Facebook, Twitter etc.), attending community outreach events, and conducting media advertising. In recent years, some municipal agencies have implemented anti-litter campaigns to increase public awareness about the impacts of litter on their communities and water quality; and to encourage the public to stop littering.

Baseline Level of Implementation

The City of Richmond in coordination with the Contra Costa Clean Water Program and the Watershed Project implemented the public education and outreach control measures prior to the effective date of the MRP. New actions or actions started prior to the effective date of the MRP and continued into the future are described under the next section.

Enhanced Level of Implementation

The City of Richmond has implemented the following public education and outreach control measures with surveys, intercepts, and performance evaluations:

- Advertising Campaign on Trash: In addition to contributing to the Contra Costa County Trash outreach Campaign, the City of Richmond displayed several images including children with trash on Richmond beaches in four different languages on a Electronic billboard at pacific East Mall and commercials on City of Richmond Cable station
- Green Tours: Target Middle School students discussion about trash and the role they and their peers play at a classroom level
- Kids for the Bays education of teachers at 3rd to 5th grade and trash action school plans
- City's website stormwater page features trash and trash clean-ups

The City of Richmond will implement the following public education and outreach control measures prior to July 1, 2014].

- Recreational Programs: target afternoon students kindergarten to 8th grade
- High School program: video programs, science afternoon programs
- Outreach to homeless encampments

Percent Reduction from Enhancements

The City of Richmond will receive an 8 percent reduction credit for implementing specific enhanced control measures described in Enhanced Level of *Implementation* section above. The 8 percent reduction credit will be applied to the City of Richmond's baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2011e). A summary of all load reductions anticipated through the implementation of this plan are included in Section 4.0.

CR-5: Anti-Littering and Illegal Dumping Enforcement Activities

Successful anti-littering and illegal dumping enforcement activities include laws or ordinances that make littering or dumping of trash illegal. Laws are enforced by various municipal agency staff (e.g., police, sheriff and public works department staff) who issue citations in response to citizen complaints or other enforcement methods (e.g., surveillance cameras, signage and/or physical barriers installed at illegal dumping hot spots). In some California jurisdictions, the minimum fine for littering is \$500 and the maximum penalty for highway littering is \$1000 (City of San Francisco 2001). However, it is difficult to enforce small littering events unless they are witnessed or solid proof exists linking the offender to the litter. As a result, enforcement tends to focus on larger scale illegal dumping activities.

Baseline Level of Implementation

The baseline trash load described in Section 2.0, assumes that the City of Richmond has adopted a basic anti-littering and illegal dumping enforcement program that entails receiving and responding to complaints from citizens as resources allow the City of Richmond's abatement crew removes trash and illegal dumping from City streets and property. Code enforcement officers cite and remove trash and illegal dumping from private properties in view of public areas.

Enhanced Level of Implementation

Since the adoption of the MRP, the City of Richmond has implemented coordinating the abatement and code enforcement process by moving the abatement crews under code enforcement in the police department and aggressively finding solutions. This includes using surveillance cameras, an illegal dumping hotline, strategic fencing including 2 hot spots, enforcement procedures including citations, and collection of evidence in attempt to identify offenders.

Percent Reduction from Enhancements

The City of Richmond will receive a 5 percent reduction credit for implementing specific enhanced control measures described in *Description of Enhanced Level of Implementation* section above. The 5 percent reduction credit will be applied to the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Richmond. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2011e) and is presented in the Trash Load Reduction Summary Table included in Section 4.

QF-1: Enhanced On-Land Trash Cleanups (Volunteers and/or Municipal)

On-land cleanups conducted by Permittees and volunteers have been successful in removing trash from identified trash hot spots and engaging local citizenry in improving their communities. Permittees have several programs in place to address on-land trash. Municipal efforts relate to ongoing beautification of impacted areas and coordination of cleanup events. Volunteer on-land cleanups involve the meeting of individuals, creek and watershed groups, civic organizations, businesses and others at designated or adopted on-land sites to remove trash. On-land trash cleanups are conducted as single-day or throughout the year.

Baseline Level of Implementation

The City of Richmond implemented the following on-land cleanup activities prior to the effective date of the MRP. The City of Richmond's abatement crew removes trash and illegal dumping from City streets and property. Code enforcement officers cite and remove trash and illegal dumping from private properties in view of public areas. These control measures are considered baseline because they were accounted for in the preliminary trash generation rates established through the *BASMAA Baseline Trash Loading Rates Project*. New or enhanced actions that began or are planned to begin after to the effective date of the MRP are described under the next section.

Enhanced Level of Implementation

Prior to July 1, 2014, the City of Richmond will be conducting or coordinating the following new or enhanced on-land trash cleanup activities listed below. These on-land cleanups will be conducted or coordinated and the volume of trash removed will be tracked to demonstrate trash loads reduced.

- Abatement crews clean-ups on open areas in watersheds affecting trash hot spots
- Code enforcement homeless encampment clean-ups not on creeks and shorelines
- MLK Day of Service Green way (Trail and Bike path) Clean-up
- Adopt a the Green Way (Trail and Bike path) Program
- Taking out the Trash Assessment and Clean-up
- One Block at a time Clean-ups
- Health and Wellness program Clean-ups

Please note that only trash that has the potential of entering the MS4 will be tracked. As a result, large items (e.g., appliances, shopping carts, furniture, mattresses, televisions, tires, lumber, etc.) that will be removed during on-land trash cleanups are not part of the volume determination since they do not have the potential of entering the MS4.

Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced beginning July 1, 2014 as a result of implementing on-land trash cleanups is 1500 gallons. This volume is equal to approximately a 3 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Richmond . Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 4.

QF-2: Enhanced Street Sweeping

Street sweeping is conducted by most, if not all, Bay Area municipalities to remove trash and debris that collect in the gutters at the edge of streets. Parked cars and large storms that produce significant runoff can impact the effectiveness of street sweepers. However, increasing parking enforcement or more frequent street sweeping (as compared to the frequency of storm events) may increase the trash load reduced to MS4s. Permittees who choose to enhance street sweeping may do so to demonstrate trash load reductions to their MS4s and progress towards trash load reduction goals required by the MRP.

Baseline Level of Implementation

The baseline trash load described in Section 2.0 incorporates the trash load reductions due to baseline street sweeping. The City of Richmond's baseline street sweeping program includes sweeping at a frequency of once per week on average in retail areas and once per month on average in all other areas. Street are swept in Richmond monthly in Residential areas and weekly on arterial routes which include all commercial and retail areas. Parking enforcement is provided with signage in all areas except those neighborhoods that protested and claimed to provide self-policing of cars on street sweeping days.

Enhanced Level of Implementation

Enhancements to street sweeping frequencies and parking enforcement (or equivalent measures) control measures will be used to calculate loads reduced from enhanced street sweeping, consistent with the trash load reduction tracking method (BASMAA 2011e). A list of planned enhancements is included in Table QF-3-1 and illustrated in Figure QF-3-1. Enhancements include:

- Signing neighborhoods not presently signed
- Addressing gated communities with public outreach

Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of enhanced street sweeping is 590 gallons. As described in Trash Load Reduction Summary Table included in Section 4, this volume is equal to approximately a 2 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Richmond.

Table QF-3-1. Planned enhanced street sweeping program in the City of Richmond.

[illegible]

QF-5: Full-Capture Treatment Devices

As defined by the Municipal Regional Stormwater Permit (MRP), a full-capture system or device is any single device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. A list of the full-capture systems and devices recognized by the San Francisco Bay Regional Water Quality Control Board (Water Board) is included in *Trash Load Reduction Tracking Method Report* (BASMAA 2011e). Trash loads reduced via publically or privately owned and operated devices within a Permittee's jurisdictional area that have been recognized by the Water Board as full-capture may be used to demonstrate attainment of trash load reduction goals.

Baseline Level of Implementation

Prior to adoption of the MRP, some Permittees installed and maintained full capture devices. To avoid penalizing these early implementers, an applicable control measure implemented within a Permittee's jurisdictional area prior to the effective date of the MRP will be credited equally to a control measure implemented after the effective date. Therefore, the baseline level of implementation is no trash full-capture devices have been installed.

Enhanced Level of Implementation

The City of Richmond installed 3 trash full-capture treatment devices in May 2009. Through an enforcement action in 2008, the City required the owners of Pacific East mall install full trash capture in their parking lot drains. The City plans to install 2 large trash capture devices prior to July 1, 2014. One large device and one small device are in drainages with 100% retail land use. One small device was placed at a bus stop with the drainage land use being 10% retail, 5 % residential and 85% commercial. One small device was placed in a high density low income land use. The second large device is planned for an a disadvantaged community in a drainage that is 90% high density low income, 8 % commercial industrial and 2 % retail. A list of these full-capture devices is included in Table QF-6-1. All devices listed within this table are enhanced trash control measures. Table QF-6-1 also includes the area treated and the calculated trash load reduced from each full-capture treatment device. These calculations are consistent with the approach described in the *Trash Load Reduction Tracking Method Report* (BASMAA 2011e).

Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing full capture devices is 874 gallons. This volume is equal to approximately a 2.5 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Richmond . Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 4.

Table QF-6-1. Trash full-capture treatment devices within the jurisdictional boundaries of the City of Richmond that are planned for installation by July 1, 2014.

[illegible]

QF-6: Creek/Channel/Shoreline Cleanups

Creek/channel/shoreline cleanups have been successful in removing large amounts of trash from San Francisco Bay area creeks and waterways; and increasing citizen's awareness of trash issues within their communities. Creek/channel/shoreline cleanups are conducted as single-day events or throughout the year by volunteers and municipal agencies. Since volunteers and municipal agencies have the common goal of clean creeks and waterways, their efforts sometimes overlap. This is apparent with some municipal agencies using volunteers to help assess and clean designated trash hot spots during single-day volunteer events.

Baseline Level of Implementation

Trash reduced via creek/channel/shoreline cleanups was not accounted for in the City of Richmond's baseline trash load described in Section 2.0. Therefore, implementation of any of the control measures described in this section is considered to be an enhancement and can be used to demonstrate progress towards load reduction goals.

Enhanced Level of Implementation

Prior to July 1, 2014, the City of Richmond will conduct MRP-required⁴ and the following non MRP-required creek/channel/shoreline cleanups⁵ listed below. Both types of cleanups will be conducted each year and the volume of trash removed will be tracked to demonstrate trash loads reduced.

- Coastal Clean-up Day
- MLK Day of Service Creek Clean-up
- Adopt a Beach Program
- Adopt a Creek Program
- Taking out the Trash Assessment and Clean-up
- Creek and Drainage Maintenance
- Code enforcement homeless encampments clean-ups on creeks and shorelines

Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing creek/channel/shoreline cleanups is 3,850 gallons. This volume is equal to approximately a 10 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Richmond. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 4.

⁴ Creek/channel/shoreline cleanups conducted in accordance with Permit Provision C.10.b.

⁵ All "other" creek/channel/shoreline cleanups conducted by a municipality that are not required by Provision C.10.b.

5.0 SUMMARY OF TRASH CONTROL MEASURE ENHANCEMENTS

The City of Richmond is committed to reducing the potential for trash impacts in local water bodies in the San Francisco Bay Area. The planned enhanced trash control measures described in Section 3.0 are also listed in Table 4-1. The enhancements are intended to comply with the 40% trash load reduction goal in MRP provision C.10.

- Single-use Carryout Plastic Bag Ordinance
- Polystyrene Foam Food Service Ware Ordinance
- Public Education and Outreach Programs
- Anti-Littering and Illegal Dumping Enforcement Activities
- Additional abatement crews clean-ups
- Code enforcement homeless encampment
- Illegal dumping hotline
- Strategic fencing
- Green way (Trail and Bike path) Clean-up
- Taking out the Trash Assessment and Clean-up
- One Block at a time Clean-ups
- Health and Wellness program Clean-ups
- Additional parking enforcement sign to enhance Street Sweeping
- Full-Capture Treatment Devices
- Additional Creek/Channel/Shoreline Cleanups (Volunteer and Municipal)
- Webpage redesigned with focus on trash
- Additional School and Recreational Programs

Table 5-1. Planned enhanced trash control measure implementation within the jurisdictional boundaries of the City of Richmond and associated trash loads reduced.

Trash Control Measure	Summary Description of Control Measure	% Reduction (Credits)	Trash Load Reduced	Cumulative % Reduction (Compared to Baseline)
Single-use Carryout Plastic Bag Ordinance (CR-1)	Bag Ban Ordinance	12	4704	14.9
Polystyrene Foam Food Service Ware Ban (CR-2)	Foodware Ordinance	8	3136	22.6
Public Education and Outreach Programs (CR-3)		8	3136	30.3
Activities to Reduce Trash from Uncovered Loads (CR-4)				
Anti-Littering and Illegal Dumping Enforcement Activities (CR-5)	Illegal dumping hotline Strategic fencing	5	1960	35.2
Improved Trash Bin/Container Management (Municipally or Privately-Controlled) (CR-6)				
Single-Use Food and Beverage Ware Ordinance (CR-7)				
Enhanced On-land Trash Cleanups (Volunteer and/or Municipal) (QF-1)	Health and wellness Adopt a trail	NA	1500	38.9
Enhanced Street Sweeping (QF-2) – (Existing and Future Enhanced)	Additional signage for enforcement	NA	590	40.3
Curb Inlet Screens (Partial-capture Treatment Device) (QF-3a)				
Enhanced Storm Drain Inlet Maintenance (QF-4)				
Full-capture Treatment Devices (QF-5)	Inlet inserts and GSRDs	NA	874	42.5
Enhanced Pump Station Trash Rack Cleaning (Partial-capture Treatment Device) (QF-3b)				
Litter Booms (Partial-capture Treatment Device) (QF-3c)				
Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) (QF-6)	Adopt a Beach Adopt a Creek Increase Creek and Drainage maintenance	NA	3860	52

5.1 Annual Reporting and Progress Towards Trash Load Reduction Goal(s)

Consistent with MRP Provision C.10.d (i), the City of Richmond intends to report on progress towards MRP trash load reduction goals on an annual basis beginning with the Fiscal Year 2011-2012 Annual Report. Annual reports will include:

1. A brief summary of all enhanced trash load reduction control measures implemented to-date;
2. The dominant types of trash likely removed via these control measures;
3. Total trash loads removed (credits and quantifications) via each control measure implementation; and
4. A summary and quantification of progress towards trash load reduction goals.

Similar to other MRP provision, annual reporting formats will be consistent region-wide. Annual reports are intended to provide a summary of control measure implementation and demonstrate progress toward MRP trash reduction goals. For more detailed information on specific control measures, the City of Richmond will retain supporting documentation on trash load reduction control measure implementation. These records should have a level of specificity consistent with the trash load reduction tracking methods described in the *BASMAA Trash Load Reduction Tracking Method Technical Report* (BASMAA 2011e).

5.2 Considerations of Uncertainties

Baseline trash loading and load reduction estimates are based on the best available information at the time this Short-Term Plan was developed. As with any stormwater loading and reduction estimate, a number of assumptions were used during calculations and therefore uncertainty is inherent in the baseline trash load estimate presented in Section 2.0 and the load reduction estimate presented in this section. For these reasons, the baseline loading estimates presented in this plan should be considered first-order estimates. During the implementation of this Short-Term Plan and subsequent plans, additional information may become available to allow the calculation of a more robust baseline load.

6.0 IMPLEMENTATION SCHEDULE

Implementation of enhanced trash control measures by the City of Richmond is currently planned to occur in a timeframe consistent with MRP requirements. A preliminary implementation schedule for all planned enhancements is described in Table 5-1. This schedule provides a timeframe for reducing trash discharged from the City of Richmond's MS4 by 40%.

Based on new information that becomes available during the implementation of this Short-Term Plan (e.g., revisions to baseline loading estimates or load reduction credits of quantification formulas), the City of Richmond may choose to amend or revise this Plan and/or the associated implementation schedule. If revisions or amendments occur, a revised Short-Term Plan and implementation schedule will be submitted to the Water Board via the City of Richmond's annual reporting process.

Table 6-1. Preliminary implementation schedule for enhanced trash control measures in the City of Richmond .

Trash Control Measure	Beginning Date of Implementation
Single-use Carryout Plastic Bag Ordinance (CR-1)	Prior to July 1, 2014
Polystyrene Foam Food Service Ware Ban (CR-2)	August 10, 2010
Public Education and Outreach Programs (CR-3)	Prior to July 1, 2014
Activities to Reduce Trash from Uncovered Loads (CR-4)	
Anti-Littering and Illegal Dumping Enforcement Activities (CR-5)	July 1, 2011
Improved Trash Bin/Container Management (Municipally or Privately-Controlled) (CR-6)	
Single-Use Food and Beverage Ware Ordinance (CR-7)	
On-land Trash Cleanups (Volunteer and/or Municipal) (QF-1)	Prior to July 1, 2014
Enhanced Street Sweeping (QF-2)	Prior to July 1, 2014
Curb Inlet Screens (Partial-capture Treatment Device) (QF-3a)	
Enhanced Storm Drain Inlet Maintenance (QF-4)	
Full-capture Treatment Devices (QF-5)	Prior to July 1, 2014
Enhanced Pump Station Trash Rack Cleaning (Partial-capture Treatment Device) (QF-3b)	
Litter Booms (Partial-capture Treatment Device) (QF-3c)	
Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) (QF-6)	Prior to July 1, 2014

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